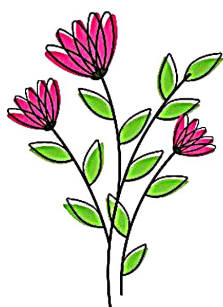


INDIRA GANDHI NATIONAL OPEN UNIVERSITY

इंदिरा गाँधी राष्ट्रीय मुक्त विश्वविद्यालय



ENROLLMENT NO:

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PROGRAMME TITLE :

COURSE TITLE :

COURSE CODE :

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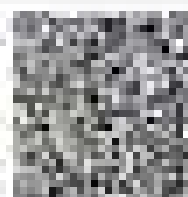


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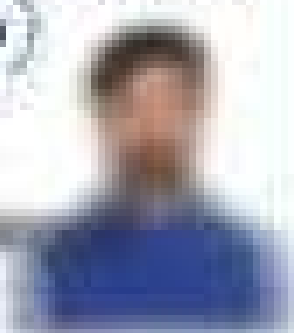
SIGNATURE OF STUDENT :



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IGNOU - Student Identity Card



Enrollment Number:

MO: 1234567890

Name of the Programme:

Name:

Address (Home/Institutional):

Mobile:

Alternate:

City (State):

Pin Code:

Signature:

1. This card is valid only for the purpose of identification and is not to be used for any other purpose.

2. The cardholder must carry this card with him/her at all times.

3. This card is issued free of charge and is not to be sold or transferred to any other person.

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Signature
Student Representative

**BLI-224: ICT FUNDAMENTALS
TUTOR MARKED ASSIGNMENT**

Coverage:

Course: ICT Fundamentals

Blocks: 1 to 4

Units: 1 to 16

Course Code: BLI- 224

Assignment Code: AST/TMA/ Jul.2024/Jan.2025

Total Marks: 35

I) Answer all the questions in not more than 500 words each.

- 1) Describe the architecture of a digital computer system with suitable illustrations. (5)
- 2) What is convergence? Explain service convergence in detail. (5)
- 3) Explain password design guidelines and authentication process. (5)

II) Write short notes on the following in not more than 200 words each. (10x2= 20 Marks)

- 1) Simplex (2)
- 2) RFID (2)
- 3) Client-Server architecture (2)
- 4) storyboard for multimedia presentation (2)
- 5) Network topologies (2)
- 6) Web searching tools (2)
- 7) File system of Ubuntu (2)
- 8) Barcode Readers (2)
- 9) Steps in running a slide show (2)
- 10) Widgets (2)

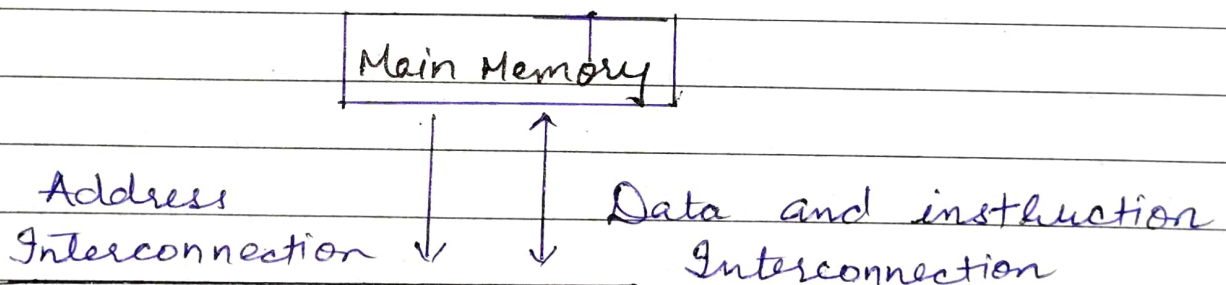
B2I-224

ICT Fundamentals

I) Answer all the questions 500 words each.

Que:1 Describe the architecture of a digital computer system with suitable illustrations.

Ans: A Digital computer is an electronic device that processes and executes a series of stored instructions, also known as a program. It takes input data, performs operations like calculations and logical decisions and then output the result.



Operation
Registers

Arithmetic
and Logic
Unit

Control Unit

Input/Output
System

Data and Control
Information Interconnection

Von Neumann Computer Architecture

When it comes to executing instruction as two important questions are :

1. How does the computer receive these instructions?
2. How does it interpret and execute them?

The computer system is made up of four key components :-

- ① Input Units :- Device like keyboards and mice that allow users to interact with the computers.
- ② Central Processing Unit (CPU) :- The "brain" of the computer responsible for interpreting and executing instruc.
- ③ Secondary storage :- Permanent storage for data, like hard drives or SSDs, which is separate from the main memory.
- ④ Output Units :- Devices like monitors and printers that display or produce the results of computers.

Que: 2 What is convergence? Explain service convergence in detail.

Ans:-

Convergence :- In recent decades, we've seen major advancements in telecommunication computer networks and the Internet

Technologies like Fiber optics, wireless, and satellite communications have become more advanced. Today, mobile phones connect nearly half the world's population, and the Internet has grown from a few connected computers in the 1980s to over a billion by 2009, a change often called the Internet Revolution.

• Service convergence :-

The idea of convergence in different areas that we have discussed so far is to carry multiple services using one common infrastructure.

- 1) Real time services like telephony on the internet
- 2) E-mail via mobile phones
- 3) Web access via bluetooth interface and mobile phone
- 4) E-mail and Web access via television cables
- 5) Internet services delivered on TV sets
- 6) Broadcasting radio and TV programs on the net
- 7) Normal telephone services via cable TV networks.

In broadband ISDN, the services are placed under some generic categories as shown under :-

1.) Audio services :-

- Telephone quality (speech)
- Broadcast quality (music)

2. Motion video services
 - Studio quality
 - Broadcast quality High definition Television (HDTV)
3. Still video services
4. Text services
5. Computer graphics services
6. Computer animation services
7. Satellite imageries

Que: 3 Explain password design guidelines and authentication process.

Ans:

Password Design Guidelines

Password design guidelines are rules that help create strong and secure passwords. A good password should have:

- A minimum of 8 characters and a maximum of 32 characters.

- A mix of uppercase letters, lowercase letters, numbers, and special symbols.

1. Password Change :- Users must change their password every 30 days.

2. Alert System :- The system alerts users 14 days before the password expires. The alert appears every time they log in.

3. Forced Change :- If a user does not change the password by the due date, the system will force the user to change it during next log.

• Password Authentication Process

The password authentication process ensures that only valid users can access the system by verifying their passwords. To keep password safe.

(1) Encrypted Storage:-

Passwords are stored in the system in an encrypted form. This encryption is irreversible, so the original cannot be recovered even if someone access the stored data.

(2) Matching Passwords:-

When a user logs in, the entered password is encrypted and compared with the stored encrypted password.

(3) Secure Transmission:-

When passwords are sent over a network, they are encrypted using a reversible encryption process so that the receiving system can decrypt them for comparison.

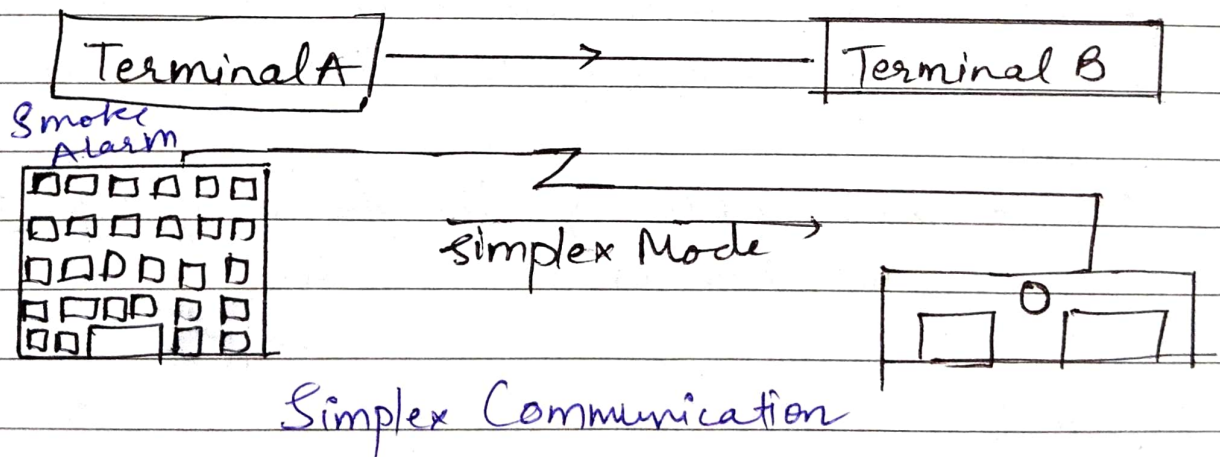
II) Write short notes on the following in not more than 200 words each.

Que:1 Simplex

Ans: Simplex this is one of the simplest techniques for data communication, in which we have one permanent sender and permanent receiver. In simplex transmission, at any point of

time one of the communicating devices can only send data, whereas the other can only receive it. Can you think about some example around.

It is like sun, which permanently send light to us, it is also used in Broadcasting TV and Radio signals where you can receive data from stations but can't transmit data back. These signals are unidirectional, where one party is the transmitter and the other is the receiver as shown in the figure, where smoke alarm is shown which is connected with fire station, it is also an example of unidirectional communication. This type of channel design is easy and inexpensive to set up.

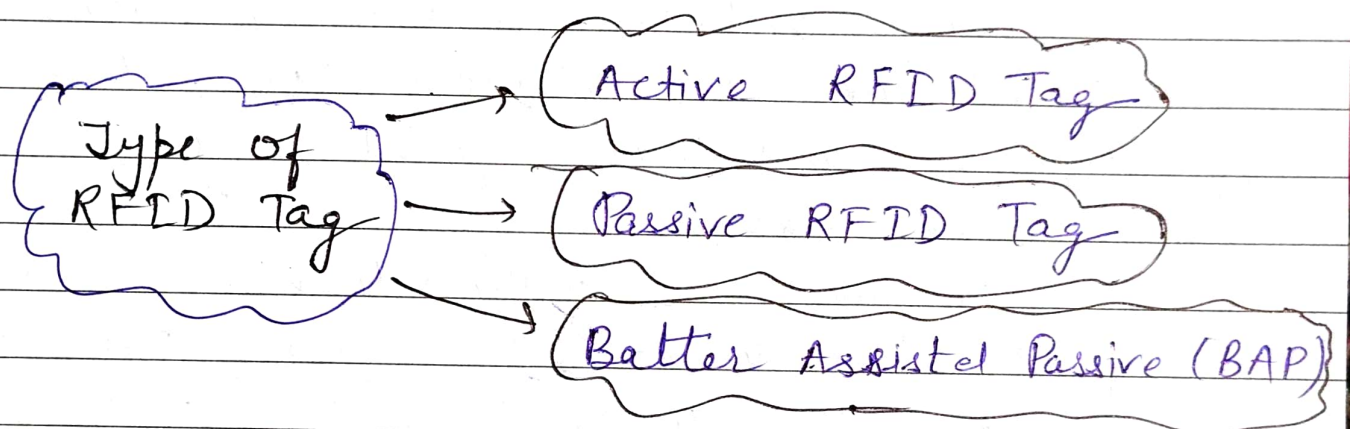


Que 2

RFID

Radio Frequency Identification operates as a small-area client-server network within a limited range of

a few meters, It used radio frequencies for communication between its two main components. The RFID Client Tag and the RFID Server or Antenna (Receiver). The RFID tag is attached to an object or product, such as a library book for identification and tracking purposes.



RFID Implementation in Libraries

One of the significant application of RFID technology is in libraries, where it is gradually replacing conventional barcodes. RFID tags which are small (measuring approximately 50 mm x 50 mm) can store detailed information about book, such as:

- Book Title
- Author's Name
- Publication Year
- Publication's Name
- Book Type

Que: 3Client - Server architectureAns:

Client-server architecture is a system where tasks are divided between servers and clients. Servers are specialized machines that perform specific functions, like managing files, handling print jobs, delivering websites or managing databases. Clients are user devices (computers, smartphones, etc.) that request services from these servers.

In a two-tier architecture, there are two parts: the clients & the server. The client handles the user interface and application programs, while the server manages database queries and transactions. For example, if a user needs data, the client sends a request to the server, which processes it and sends back the result. Technologies like ODBC and JDBC help connect clients to databases using standard interfaces.

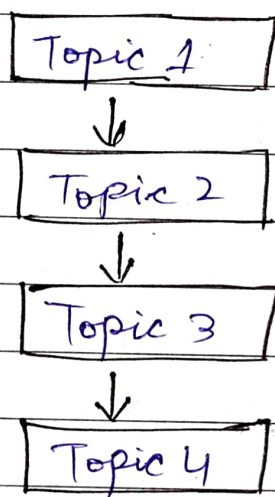
In a three-tier architecture, there's an additional middle layer called the application server. This layer handles business logic, processes client requests and communication with the database server. The client interacts with the application server, which then interacts with the database server.

Que^{no} 4.

Ans:

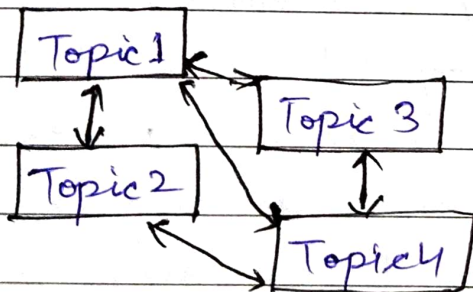
Storyboard for multimedia presentation
 A storyboard is an illustrated scene by scene layout of the multimedia presentation. It generally includes text notes and sketches of the most important parts of presentation
Different type of storyboard

① Linear sequential



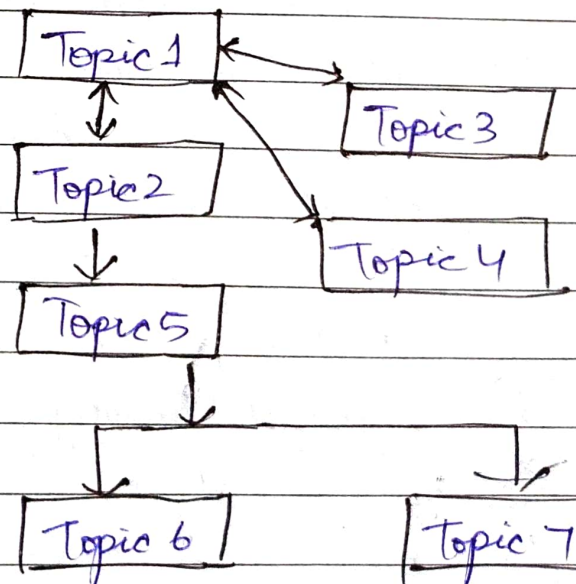
Linear story Board
 progresses in
 a lock step fashion
 One topic after the next

② Non Linear



Non Linear story Board
 I can move from
 one topic to another without
 being forced to a linear or
 a hierarchical progression

③ Composite



Que: 5 Network topologies

Network topologies refer to the arrangement of different elements (links, nodes etc.) in a computer network. Here are some common types:

1. Bus topology :- All devices share a single communication line. It's simple but can suffer from collisions & is not very scalable.

2. Star Topology :- All devices connect to a central hub or switch. This makes management easier and improves reliability but the central hub becomes a single pt. of failure.

3. Ring Topology :- Each device is connected to two others, forming a circular pathway for data. It can provide reliable performance.

4. Mesh Topology :- Each device is interconnected providing multiple pathways for data. This offers high redundancy and reliability but can be complex and costly to implement.

5. Tree Topology :- A hybrid of star and bus topologies, it features a hierarchy of devices connected in a branching manner. This allows for scalability but can be affected by the central connection point.

6. Hybrid Topology :- A combination of two or more topologies leveraging the benefits of each while addressing their weaknesses.

Que:6 Web searching tools

① Search Engines :-

- Google :- The most widely used offering a vast index of a web pages and advanced search features.
- Bing :- Microsoft's search engine, it now relies on Bing for search results but still offers a directory and news aggregation.

② Metasearch Engines :-

- DuckDuckGo :- Prioritizes user privacy and does not track searches, aggregating results from various search engines.
- Dogpile :- Combines results from multiple search engines for a broader set of results.

③ Specialized Search Engines :-

- Wolfram Alpha :- Focuses on computational knowledge and answer factual queries.
- PubMed :- A specialized search engine for biomedical literature and research.

④ Academic Search Engines

Google Scholar

Microsoft Academic

(5) Social Media Search Tools

Twitter Search

Facebook Search

Que 7

File system of Ubuntu

Ans:

Ubuntu is an operating system based on Linux that is also developed by a worldwide community of programmer. Ubuntu is based on the concept of free or open source software, meaning that you do not pay any licensing fees for Ubuntu and you can download, use and share the operating system free of charge. Being a Linux-based Ubuntu has a well-deserved reputation for stability and security.

Home Directory :- This is the only directory you will have access to without using your password to gain temporary administrator privileges. All of your files reside here, along with your settings and preferences, inside a folder called /home/username/ unless are not installed in a particular folder. So if your username is Suman, your files and settings will be in the /home/suman folder.

Media Directory :- or /mnt are where your media (CDs, DVDs, USB drives, etc.)

and mounted partitions would go

Root Directory :- is the / home folder for root and has its own settings.

User Directory :- is where a lot of stuff is stored that users will be using.

● Que:8 Barcode Readers

Ans: Barcode readers also known as barcode scanners are devices that read barcodes machine readable representations of data. There are the main types and features :-

① Laser Scanner :-

- Use laser beams to scan barcodes
- Highly accurate and can read barcode from a distance.

② CCD (Charge-Coupled Device) Scanners :-

- Use an array of tiny light sensors to capture barcode data.
- Require the scanner to be close to the barcode.

③ Image Scanner :-

- Capture an image of the barcode and use software to decode it
- Can read various types of barcodes, including damaged ones.
- Often used in smartphones.

- ④ 2D Barcode Scanners :-
- Specifically designed to read 2D barcode like QR codes and Data matrix codes.
 - Often used for mobile payments and marketing.

- ⑤ Bluetooth Barcode Scanners :-
- Wireless scanners that connect to devices via Bluetooth.
 - Useful for mobility and ease of use in various type & settings.

Que: 9. Steps in running a slide show

1. Prepare Your Presentation :-

- Organize your slides in a logical order.
- Ensure content is clear, concise and visually appealing.

② Choose Your software :-

- Use programs like MS Powerpoint, Google slides
- Familiarize yourself with the features of software.

③ Setup your Equipment :-

- Connect your computer to projector & large screen
- Test the display settings and resolution.

④ Rehearse :-

- Practice your presentation multiple times.
- Familiarize yourself with slide transitions & timing.

⑤ Check Technical Aspects :-

- Ensure that all media (Video, audio) works correctly.
- Have backups of your presentation on a USB or cloud.

- ⑥ Engage Your Audience:
Start with a strong opening to capture attention
- ⑦ Navigate the slides:-
Use keywords shortcuts (like arrow keys)
- ⑧ Handle Questions:-
Designate time for questions during & after presentation.
- ⑨ Conclude Effectively:-
Summarize key points and leave the audience with a clear take away & thank you audience for their time
- ⑩ Gather feedback:-
After the presentation, seek feedback to improve future performance.

Que: 10 Widgets

Ans:

Widgets are small programming codes that can users can add to their webpages, personalized homepages, web browsers, desktops, blogs or social network. These codes are often embedded within an image files and can be activated through a mouse click or keyboard command.

Main types of Widgets :-

- ① Web Widgets:- They can only part of a website unless customized to function as a desktop widget. Eg. Youtube Video, Add This.

- ② Desktop Widgets :- Desktop widgets are not part of a website and can be integrated directly onto a computer's desktop.
Example - Desktop Weather.

Types and Uses of Widgets

- ① Graphics Uses to create banners, special fonts and animated image / text
- ② Gadgets Hit counters, weather forecasts calendars and maps on websites
- ③ Entertainment TV listings, daily quotes interesting facts or Games for fun.
- ④ Social facebook or Twitter
Example: Addthis.com
- ⑤ Audio-Visual Widgets can stream Youtube Video directly to a webpage for visual and audio engagement.